

# ARCADIS



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## MEMO

To:  
Mitch Cron, USEPA

Copies:  
Michael F. Bedard  
Christopher T. Sharpe  
Chris Ann Gahagan

ARCADIS G&M, Inc.  
6 Terry Drive  
Suite 300  
Newtown  
Pennsylvania 18940  
Tel 267 685 1800  
Fax 267 685 1801

From:  
Frank C. Natitus  
Diane D. Wisbeck

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Subject:  
2006 Facility Vapor Intrusion Results  
Bally Groundwater Superfund Site  
Bally, PA

This memo provides a draft summary of the laboratory analytical data gathered during the supplemental vapor intrusion study completed in February 2006 along with draft conclusions and recommendations for discussion purposes. The purpose of this sampling event was to evaluate indoor air quality.

### Sampling Summary

- Subslab soil vapor samples were collected at the 11 locations shown on **Figure 1**.
- Indoor air samples were collected prior to subslab soil vapor sampling at the eight locations shown on **Figure 1**.
- Ambient air samples were collected upwind and downwind of the facility. Target chemicals were not detected in either ambient air sample.

All samples were collected as proposed in the workplan. Potential cancer risks and non-cancer hazards were calculated using standard default exposure factors and the chemical concentrations observed in the indoor air samples. For discussion, the potential risks/hazards were compared to the USEPA (1991a) target risk range of  $1E-6$  to  $1E-4$  and the non-cancer Hazard Index of one. For all samples, TCE is the only chemical contributing to the potential risks.

The observed TCE concentration in indoor air samples ranged from  $1.4 \text{ ug/m}^3$  to  $48 \text{ ug/m}^3$ . The observed concentrations were greater than the USEPA Region 3 Risk-based concentration for ambient air of  $0.02 \text{ ug/m}^3$  (residential), but less than or equal to the Pennsylvania Department of Environmental Protection Medium-Specific Concentration for Indoor Air Quality  $MSC_{IAQ}$  of  $48 \text{ ug/m}^3$  (non-residential). All other observed concentrations were less than both the RBCs and  $MSC_{IAQs}$ . The data observed in the individual areas of the building are discussed below.

Part of a bigger picture

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1) engineering control  
s/s mitigation (ventilation)  
indoor ventilation

### Results and Conclusions

#### Impress Industries

2) ICS - deed restriction  
high restriction

The potential incremental cancer risk ranges from  $4E-5$  to  $7E-4$ , with the upper end of the predicted risk range exceeding the target risk range. The non-cancer hazard index is less than one ( $HI=0.5$ ), indicating that adverse non-cancer effects are unlikely. Another round of subslab vapor and indoor air sampling during the summer months is recommended to further refine understanding of potential exposures.

#### L&Z Public Storage

long-term monitoring

This area is a public storage facility; thus is not regularly frequented by a site worker. The following exposure factors are based on the presumed reduced occupancy rate:

- ✓ Inhalation rate of  $1.6 \text{ m}^3/\text{hour}$  based on moderate activity level (USEPA, 1997);
- ✓ Exposure time of 2 hours per day (site-specific);
- ✓ Exposure frequency of 60 days per year (site-specific);
- ✓ Exposure duration of 25 years (USEPA, 1991b);
- ✓ Body weight of 70 kg (USEPA, 1991b); and
- ✓ Averaging time for cancer effects of 25,550 days based on a 70-year average lifespan;
- ✓ Averaging time for non-cancer effects of 9,125 days based on a 25-year exposure duration.

this is high

Using the area-specific exposure factors identified above, the potential incremental cancer risk ranges from  $3E-6$  to  $5E-5$ , which is within the target risk range. The non-cancer hazard index is less than one ( $HI=0.04$ ), indicating that adverse non-cancer effects are unlikely. Using standard default commercial/industrial exposure factors, the potential incremental cancer risk is  $9E-4$  which is greater than the upper end of the target risk range. At the current reduced utilization rate of this portion of the building, the elevated TCE concentration observed in IAQ-4 is not posing an immediate health risk. Therefore, an additional round of subslab vapor and indoor air sampling during the summer months is recommended to further refine the potential exposure.

#### T.G. Packaging / Cutting Edge (formerly S&W Metals)

The potential incremental cancer risk ranges from  $5E-6$  to  $1E-4$ , with the upper end of the predicted risk range at the upper limit of the target risk range. The non-cancer hazard index is less than one ( $HI=0.2$ ), indicating that adverse non-cancer effects are unlikely. The TCE concentration measured in the indoor air

high

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sample (IAQ-5) was greater than in the subslab vapor sample (SV-6) indicating a potential indoor air source. *Therefore, additional subslab vapor and indoor air sampling during the summer months is recommended to further characterize potential vapor intrusion.*

## Office Area

The potential incremental cancer risk ranges from  $2E-6$  to  $3E-5$ , which is within the target risk range. The non-cancer hazard index is less than one ( $HI=0.02$ ), indicating that adverse non-cancer effects are unlikely. In addition, two COPCs, 1,1,1-trichloroethane and 1,1-dichloroethene, were detected in the indoor air samples; however they were not detected in the corresponding subslab soil vapor sample – indicating that the source may not be the subsurface. *Therefore, further action is not recommended for this area.*

## Hunsinger Plastics

Based on the TCE concentration observed in the subslab vapor sample and the attenuation factor observed in the L&Z Public Storage facility, *a co-located subslab vapor and indoor air sampling during the summer months is recommended.*

## Stauffer Manufacturing Company, Inc.

The potential incremental cancer risk ranges from  $2E-6$  to  $4E-5$ , which is within the target risk range. The non-cancer hazard index is less than one ( $HI=0.03$ ), indicating that adverse non-cancer effects are unlikely. *Therefore, further action is not recommended in this area.*

## Gregory's Woodworking

The potential incremental cancer risk ranges from  $4E-7$  to  $8E-6$ , which ranges from less than to within the target risk range. The non-cancer hazard index is less than one ( $HI=0.006$ ), indicating that adverse non-cancer effects are unlikely. Although the TCE concentration observed in the subslab soil vapor sample was relatively high, significant attenuation between the subsurface environment and indoor air is occurring. In addition, the potential incremental cancer risk is within the USEPA target risk range. *Therefore, further action is not recommended in this area.*

